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CLAIMS

[Claim(s)]
[Claim 1] An image pick-up means by which the number of the pixels for an image pick-up located in a line at least with one side of a lengthwise direction and a longitudinal direction at a single tier is N individual, It is the art of the image pick-up signal applied to the image image pick-up equipment which forms the picture signal which constitutes at least one side of the vertical single tier on a screen, and a horizontal single tier from a predetermined sampling period based on the image pick-up signal of N individual taken out one by one from the pixel for an image pick-up of said N individual on a par with a single tier. An image pick-up means D by which fewer than said N individual the number of the pixels for an image pick-up on a par with a single tier is M (N>M) is applied to at least one side of a lengthwise direction and a longitudinal direction. Data processing is made to generate the data of N individual from M image pick-up signals taken out from said M pixels for an image pick-up on a par with the single tier of this image pick-up means D one by one with said sampling period. The art of the image pick-up signal characterized by forming the picture signal which constitutes at least one side of the vertical single tier on a screen, and a horizontal single tier based on the data of said N individual.
[Claim 2] To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D1 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1) It is the art of the image pick-up signal at the time of applying an image pick-up means D2 to replace with said image pick-up means D1, and to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction at least. The art of the image pick-up signal which only scale-factor PHPH=NH/MH carries out amplification processing of the image pick-up signal outputted from said image pick-up means D2 in a longitudinal direction, and is characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.
[Claim 3] To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a lengthwise direction based on the image pick-up signal which the image pick-up means D3 which two or more pixels for an

image pick-up are arranged, and changes outputs in the pixel for an image pick-up and longitudinal direction of NV individual (NV> 1) It is the art of the image pick-up signal at the time of applying an image pick-up means D4 to replace with said ****** means D3, and to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction at least. The art of the image pick-up signal which carries out amplification processing of the image pick-up signal outputted from said image pick-up means D4 only scale-factor PVPV=NV/MV in a lengthwise direction, and is characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.

[Claim 4] To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D5 which the pixel for an image pick-up of NV individual (NV> 1) is arranged by the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1), and grows into them outputs It is the art of the image pick-up signal at the time of applying an image pick-up means D6 to replace with said image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) in a longitudinal direction in MH individual (NH>MH) and a lengthwise direction. Amplification processing of the image pick-up signal outputted from said image pick-up means D6 is carried out only scale-factor PVPV=NV/MV in a longitudinal direction at a scale-factor PHPH=NH/MH pan at a lengthwise direction, respectively. The art of the image pick-up signal characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.

[Claim 5] A ****** means by which the number of the pixels for an image pick-up located in a line with length or a longitudinal direction at a single tier is N individual, The image pick-up signal of N individual one by one with a predetermined sampling period from the pixel for an image pick-up of said N individual on a par with a single tier Ejection, It is image image pick-up equipment which forms the picture signal which constitutes the length or the horizontal single tier on a screen based on the image pick-up signal of this N individual. An image pick-up means D by which fewer than said N individual the number of the pixels for an image pick-up on a par with a single tier is M (N>M) is applied to length or a longitudinal direction. It has the data processing section which performs data processing based on the image pick-up signal taken out from said image pick-up means D at least. Said data processing section Data processing which generates the data of N individual is performed as data processing at least from M image pick-up signals taken out from said M pixels for an image pick-up on a par with a single tier one by one with said sampling period. Image image pick-up equipment characterized by forming the picture signal which constitutes the length or the horizontal single tier on a screen based on the processing data of said N individual.

[Claim 6] It is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D1 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1). Have the storing means of the longitudinal direction scale-factor parameter PH set up beforehand, and it is further based on said stored longitudinal direction scale-factor parameter PH. It has the scale-factor

encoder which outputs said image pick-up signal after only a predetermined scale factor is expanded at least to a longitudinal direction. In case the image pick-up signal which an image pick-up means D2 to replace with said image pick-up means D1, and to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction outputs is processed Image image pick-up equipment which amplification processing is made by said scale-factor encoder, and is characterized by the value of said longitudinal direction scale-factor parameter PH being PH=NH/MH.

[Claim 7] Said image image pick-up equipment is equipped with the A/D converter which changes into a digital signal the analog signal which said image pick-up means D2 outputs. And at least internal and external one side of said scale-factor encoder is equipped with the processing unit which processes said digital signal. Said scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with said processing unit. Said data processing means is image image pick-up equipment according to claim 6 characterized by considering as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said set-up longitudinal direction scale-factor parameter PH, and performs lateral scale-factor adjustment.

[Claim 8] It is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a lengthwise direction based on the image pick-up signal which the image pick-up means D3 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and longitudinal direction of NV individual (NV> 1). Have the storing means of the depth magnification parameter PV set up beforehand, and it is further based on said stored depth magnification parameter PV. It has the scale-factor encoder which outputs said image pick-up signal after only a predetermined scale factor is expanded at least to a lengthwise direction. In case the image pick-up signal which an image pick-up means D4 to replace with said image pick-up means D3, and to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction outputs is processed Image image pick-up equipment which amplification processing is made by said scale-factor encoder, and is characterized by the value of said depth magnification parameter PV being PV=NV/MV.

[Claim 9] Said image image pick-up equipment is equipped with the A/D converter which changes into a digital signal the analog signal which said image pick-up means D4 outputs. And at least internal and external one side of said scale-factor encoder is equipped with the processing unit which processes said digital signal. Said scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with said processing unit. Said data processing means is image image pick-up equipment according to claim 8 characterized by considering as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said set-up depth magnification parameter, and performs scale-factor adjustment of a lengthwise direction.

[Claim 10] It is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D5 which the pixel for an image pick-up of NV individual (NV> 1) is arranged by the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1), and grows into them outputs. It has the

storing means of the longitudinal direction scale-factor parameter PH set up beforehand and the depth magnification parameter PV. Furthermore, it is based on said stored longitudinal direction scale-factor parameter PH and the depth magnification parameter PV. It has the scale-factor encoder with which only a predetermined scale factor expands said image pick-up signal in the direction in every direction. In case the image pick-up signal which an image pick-up means D6 to replace with said image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) in a longitudinal direction in the pixel for an image pick-up and lengthwise direction of MH individual (NH>MH) outputs is processed Image image pick-up equipment with which amplification processing is made by said scale-factor encoder, and the value of said scale-factor parameter is characterized by being PV=NV/MV at a PH=NH/MH pan.
[Claim 11] Said image image pick-up equipment is equipped with the processing unit which processes the A/D converter which changes into a digital signal the analog signal which said image pick-up means D6 outputs, and said digital signal. And said scale-factor encoder is equipped with the processing means constituted as a program which can be performed with said processing unit. Said processing means is image image pick-up equipment according to claim 10 characterized by considering as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said longitudinal direction scale-factor parameter and depth magnification parameter which were given, and performs scale-factor adjustment of both directions in every direction.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the art and image image pick-up equipment of an image pick-up signal which solve the screen cutback and screen distortion which are produced in application of an image pick-up means by which the numbers of configuration pixels especially differ about the art and image image pick-up equipment of an image pick-up signal.
[0002]
[Description of the Prior Art] Conventionally, in the image pick-up equipment using the solid state image pickup device represented by the CCD image sensor as an image pick-up means, the number of image pick-up pixels is constituted in consideration of the convenience of the acquired signal. Since the obtained image is especially outputted to a television set, it is constituted so that the analog recording apparatus (for example, 8mm video) according to the NTSC system which is television specification, or PAL and an SECAM system may be suited.
[0003] It is the number of image pick-up pixels of the image pick-up means used for the image pick-up equipment which records the analog signal by such NTSC system directly, and reading of a horizontal or a vertical signal, and the basic clock frequency concerning timing has correlation, and the basic clock which suits it is used for the image pick-up means of a certain number configuration of image pick-up pixels. Therefore, that to which it reads and the band property of the processing circuit of a signal also suits this

basic clock will be chosen.
[0004] Moreover, the NTSC signal by the ordinary analog signal etc. is not recorded directly, it is in the inclination recorded in the format suitable for digitization, and the system which records the picturized animation by advance of a digitization technique in recent years also has DVC specification in noncommercial digital VTR as such an example. Since it became a sampling period which is different that it can set to the system of the conventional analog recording in such a digitized record system, it was common that a basic clock frequency, the number of horizontal picture elements, etc. needed a different image pick-up means of dedication from an ordinary thing.
[0005] For this reason, when the image pick-up equipment of the analog recording method by which the number configurations of image pick-up pixels which were mentioned above differ, and the image pick-up equipment corresponding to each of both systems (an analog recording method and digital-storage method) by which the further aforementioned image pick-up recording methods differ are constituted, it is that to which the image pick-up means (for example, CCD solid state image pickup device) doubled with each image pick-up equipment and system was prepared, and the signal-processing part also suited each, and it needed to constitute.
[0006] If it explains in full detail further also among the above based on an accompanying drawing about the image pick-up equipment corresponding to both the systems by which image pick-up recording methods differ, 14.31Mhz(es) which are 4 times the frequencies of a subcarrier will be used so that it may become easy [the basic clock frequency of the recording apparatus (8mmVTR etc.) which record an NTSC signal, for example] required for an NTSC signal to generate [of subcarrier 3.58Mhz]. Drawing 11 is a mimetic diagram explaining the screen configuration of 8mm video camera with which the normal aspect ratio was realized.
[0007] When this basic clock frequency of 14.31Mhz(es) is used, the number of clocks equivalent to 1H period (1 level period) of an NTSC signal becomes 910 pieces as shown in drawing 11 . If the part which does not become real images, such as the blanking section included within the period of 1H, is removed, it will convert from the usual picture area specified by the NTSC standard, and the horizontal effective pixel of an image pick-up means, for example, a CCD solid state image pickup device, will become 768 pieces.
[0008] On the other hand, since it is perpendicularly specified as 485 as the significant part among 525 are specified by the NTSC standard, there is no degree of freedom to a system, and the number of effective pixels is set to 485. Therefore, the CCD solid state image pickup device used for 8mmVTR is constituted so that it may be illustrated and a screen aspect ratio (aspect ratio) can picturize the image of 3:4 as 768 level effective pixels and 485 vertical effective pixels. By this, the circle-like image pattern Izp0 will be displayed on a screen as a circle at the time of a display.
[0009] On the other hand, in the image pick-up means used for digital VTR (DVC), the basic clock used by the recording device side is specified as 13.5Mhz(es). This basic clock is not specified in view of the effectiveness of the digital compression which digital storage equipment makes, and, therefore, the adjustment or compatibility with the subcarrier of the NTSC standard etc. are not taken into consideration.
[0010] However, since it is necessary to display a playback image on the television set of the usual NTSC system also in digital VTR, if this is made to correspond to the signal

format of NTSC, as shown in drawing 12 , it will become 711 pieces that it is equivalent to the level effective pixel which the number of clocks of 1H became 858 pieces, and removed the blanking. Perpendicularly, it is the same as that of the above 485 on the constraint displayed with NTSC system. Thus, it consists of digital storage methods so that a screen aspect ratio (aspect ratio) can picturize the image of 3:4 because a basic clock, a level effective pixel, a vertical effective pixel, etc. fulfill the above. By this, the circle-like image pattern Izp1 will be displayed on a screen as a perfect circle at the time of a display.

[0011]

[Problem(s) to be Solved by the Invention] Here, the case where the aforementioned number of level effective pixels connects to the image pick-up equipment for 8mmVTR(s) of 14.31Mhz(es) in a basic clock the CCD solid state image pickup device with which a basic clock is used for the image pick-up equipment of the digital storage method corresponding to 13.5Mhz by 711, and it applies is examined.

[0012] Each part which performs signal processing of this image pick-up equipment is made into the completely same mode of operation as the case where a CCD solid state image pickup device with 768 level effective pixels is connected, and subsequently this CCD solid state image pickup device is exchanged for the CCD solid state image pickup device of 711 level effective pixels, and it is made to operate. Thereby, an output signal as shown in drawing 13 is acquired. Drawing 13 is a mimetic diagram explaining the screen configuration at the time of application of the image pick-up means of few level effective pixels (711 pieces).

[0013] After driving 711 level effective pixels if the CCD solid state image pickup device of few level effective pixels is connected, since the actuation as the case where the number of level effective pixels is 768 with the basic clock same [14.31Mhz(es) and a system] is carried out as shown in this drawing, a part for 57 clocks is outputted as a non-signal part Ep. That is, since there is no pixel in this part, it becomes a non-signal. Moreover, since reading appearance will be quickly carried out to a horizontal chisel time amount target, original 3:4 will collapse, the aspect ratio (aspect ratio) of a usual picture area will turn into an aspect ratio called 3:3.703, and, therefore, distortion will generate it in an image at a longitudinal direction. Consequently, the nonconformity displayed on a screen as an ellipse at the time of a display produces the circle-like image pattern Izp2. Thus, when an image pick-up means by which the numbers of configuration pixels differed was applied, there was inconvenience that a screen cutback and screen distortion occurred, and utilization was difficult.

[0014] As mentioned above, the number of level effective pixels needs to use the CCD solid state image pickup device of 768 by 14.31Mhz(es), and, on the other hand, for example, a basic clock must use for the image pick-up equipment for digital VTR the CCD solid state image pickup device with which the number of level effective pixels differs [a basic clock] from the above of 711 by 13.5Mhz(es) at the image pick-up equipment for 8mmVTR so that clearly. Furthermore, since basic clocks differ, a camera digital disposal circuit and amplifier must consist of different specifications which suit each. Therefore, manufacture / adjustment trial line became separate treatment, and, in addition to the problem on productivity, there was a problem of contradiction in cost.

[0015] Moreover, since basic clocks also differed when the numbers of image pick-up pixels of the image pick-up means used differed also about the image pick-up equipment

which records the analog signal by the above NTSC system directly, the image pick-up means of a different number configuration of image pick-up pixels was not able to be used for the image pick-up equipment (a basic clock generation machine, a camera digital disposal circuit, and amplifier are provided) fitted to a certain image pick-up means like the above. In the further above-mentioned case, it was about that from which a level effective pixel differs, but application of as opposed to the specification of free setting out in vertical definition which the same inconvenience will occur with having mentioned above also about that from which a vertical effective pixel differs, and is especially different from the conventional television specification was not desirable.

[0016] This invention was made in order to solve the trouble in the above conventional techniques, and it aims at offering the art and image image pick-up equipment of an image pick-up signal which make it possible to use the image pick-up means of a different number configuration of image pick-up pixels for the image pick-up equipment constituted so that a certain image pick-up means might be suited.

[0017]

[Means for Solving the Problem] In order to solve the technical problem of said conventional technique, the art of the image pick-up signal concerning claim 1 of this invention An image pick-up means by which the number of the pixels for an image pick-up located in a line at least with one side of a lengthwise direction and a longitudinal direction at a single tier is N individual, It is the art of the image pick-up signal applied to the image image pick-up equipment which forms the picture signal which constitutes at least one side of the vertical single tier on a screen, and a horizontal single tier from a predetermined sampling period based on the image pick-up signal of N individual taken out one by one from the pixel for an image pick-up of said N individual on a par with a single tier. An image pick-up means D by which fewer than said N individual the number of the pixels for an image pick-up on a par with a single tier is M (N>M) is applied to at least one side of a lengthwise direction and a longitudinal direction. Data processing is made to generate the data of N individual from M image pick-up signals taken out from said M pixels for an image pick-up on a par with the single tier of this image pick-up means D one by one with said sampling period. It is characterized by forming the picture signal which constitutes at least one side of the vertical single tier on a screen, and a horizontal single tier based on the data of said N individual.

[0018] According to the aforementioned approach, when the image pick-up means of the configuration of the number for an image pick-up (in this case, M pieces) smaller than a predetermined number (in this case, N individual) of pixels in length or a longitudinal direction is used, the data of N individual are generated by data processing from M image pick-up signals acquired. Thereby, formation of the picture signal in which image display without configuration distortion is possible is filled in the length of a screen, or a longitudinal direction. And it is not restrained by the aspect ratio of a screen.

[0019] Furthermore, since the aforementioned data processing can be carried out also not only to a digital signal but to an analog signal, processing is made also about the image pick-up signal of analog format.

[0020] The art of the image pick-up signal concerning claim 2 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D1 which two or more pixels for an image pick-up are

arranged, and changes outputs in the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1) It is the art of the image pick-up signal at the time of applying an image pick-up means D2 to replace with said image pick-up means D1, and to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction at least. Only scale-factor PHPH=NH/MH carries out amplification processing of the image pick-up signal outputted from said image pick-up means D2 in a longitudinal direction, and it is characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.

[0021] According to the aforementioned approach, if the image pick-up means of the configuration of the number for an image pick-up (MH individual in this case) smaller than a predetermined number (NH individual in this case) of pixels in a longitudinal direction is used, amplification processing will be made for a scale factor PH (PH=NH/MH) in a longitudinal direction. Thereby, to the limit of the longitudinal direction of a screen, the picture signal in which image display without configuration distortion is possible is formed, and, moreover, a predetermined screen aspect ratio is realized.

[0022] The art of the image pick-up signal concerning claim 3 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a lengthwise direction based on the image pick-up signal which the image pick-up means D3 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and longitudinal direction of NV individual (NV> 1) It is the art of the image pick-up signal at the time of applying an image pick-up means D4 to replace with said image pick-up means D3, and to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction at least. Amplification processing of the image pick-up signal outputted from said image pick-up means D4 is carried out only scale-factor PVPV=NV/MV in a lengthwise direction, and it is characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.

[0023] According to the aforementioned approach, if the image pick-up means of the configuration of the number for an image pick-up (MV individual in this case) smaller than a predetermined number (NV individual in this case) of pixels to a lengthwise direction is used, amplification processing will be made for a scale factor PV (PV=NV/MV) in a lengthwise direction. Thereby, to the limit of the lengthwise direction of a screen, the picture signal in which image display without configuration distortion is possible is formed, and, moreover, a predetermined screen aspect ratio is realized.

[0024] The art of the image pick-up signal concerning claim 4 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D5 which the pixel for an image pick-up of NV individual (NV> 1) is arranged by the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1), and grows into them outputs It is the art of the image pick-up signal at the time of applying a ****** means D6 to replace with said image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) in a longitudinal direction in MH individual (NH>MH) and a lengthwise direction. Amplification processing of the image pick-up signal outputted from said

image pick-up means D6 is carried out only scale-factor CVPV=NV/MV in a longitudinal direction at a scale-factor PHPH=NH/MH pan at a lengthwise direction, respectively, and it is characterized by forming the picture signal of said predetermined aspect ratio based on the signal with which this amplification processing was performed.
[0025] According to the aforementioned approach, even if the image pick-up means of a configuration with few (the longitudinal direction in this case MH individual, further a lengthwise direction MV individual) pixels for an image pick-up than a predetermined number (the longitudinal direction in this case NH individual, further a lengthwise direction NV individual) is applied, the picture signal in which image display without configuration distortion is possible to the limit of the direction of a screen in every direction is formed, and, moreover, a predetermined screen aspect ratio is realized.
[0026] An image pick-up means by which the number of the pixels for an image pick-up with which the image image pick-up equipment concerning claim 5 of this invention is located in a line with length or a longitudinal direction at a single tier is N individual, The image pick-up signal of N individual one by one with a predetermined sampling period from the pixel for an image pick-up of said N individual on a par with a single tier Ejection, It is image image pick-up equipment which forms the picture signal which constitutes the length or the horizontal single tier on a screen based on the image pick-up signal of this N individual. An image pick-up means D by which fewer than said N individual the number of the pixels for an image pick-up on a par with a single tier is M (N>M) is applied to length or a longitudinal direction. It has the data processing section which performs data processing based on the image pick-up signal taken out from said image pick-up means D at least. Said data processing section Data processing which generates the data of N individual is performed as data processing at least from M image pick-up signals taken out from said M pixels for an image pick-up on a par with a single tier one by one with said sampling period. It is characterized by forming the picture signal which constitutes the length or the horizontal single tier on a screen based on the processing data of said N individual.
[0027] According to the aforementioned configuration, even if the image pick-up means of the configuration of the number for an image pick-up (in this case, M pieces) smaller than a predetermined number (in this case, N individual) of pixels in length or a longitudinal direction is applied When the data processing section generates the data of N individual from M image pick-up signals, the picture signal in which image display without configuration distortion is possible to the limit of the length of a screen or a longitudinal direction is formed, and, moreover, it is not restrained by the aspect ratio of a screen. Furthermore, since the aforementioned data processing section can be constituted possible [operation] also not only to a digital signal but to an analog signal, processing is made also about the image pick-up signal of analog format.
[0028] The image image pick-up equipment concerning claim 6 of this invention is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D1 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1). Have the storing means of the longitudinal direction scale-factor parameter PH set up beforehand, and it is further based on said stored longitudinal direction scale-factor parameter PH. It has the scale-factor encoder which outputs said

image pick-up signal after only a predetermined scale factor is expanded at least to a longitudinal direction. It replaces with said image pick-up means D1, in case the image pick-up signal which an image pick-up means D2 to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction outputs is processed, amplification processing is made by said scale-factor encoder, and it is characterized by the value of said longitudinal direction scale-factor parameter PH being PH=NH/MH.
[0029] According to the aforementioned configuration, even if it uses the image pick-up means of the configuration of the number for an image pick-up (MH individual in this case) smaller than a predetermined number (NH individual in this case) of pixels in a longitudinal direction, by making amplification processing for the scale factor of the longitudinal direction scale-factor parameter PH (PH=NH/MH) by the scale-factor encoder, the picture signal in which image display without configuration distortion is possible to the limit of the longitudinal direction of a screen is formed, and, moreover, a predetermined screen aspect ratio is realized. The longitudinal direction amplification processing by this scale-factor encoder is constituted by an analog signal response or digital signal response.
[0030] The image image pick-up equipment concerning claim 7 of this invention is set to a thing according to claim 6. It has the A/D converter which changes into a digital signal the analog signal which said image pick-up means D2 outputs. And at least internal and external one side of said scale-factor encoder is equipped with the processing unit which processes said digital signal. Said scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with said processing unit. It is characterized by considering said data processing means as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said set-up longitudinal direction scale-factor parameter PH, and performs lateral scale-factor adjustment.
[0031] According to the aforementioned configuration, correction, updating, and modification of the content of the longitudinal direction scale-factor processing program are easily made by constituting a data processing means as a program which can be performed with a processing unit.
[0032] The image image pick-up equipment concerning claim 8 of this invention is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a lengthwise direction based on the image pick-up signal which the image pick-up means D3 which two or more pixels for an image pick-up are arranged, and changes outputs in the pixel for an image pick-up and longitudinal direction of NV individual (NV> 1). Have the storing means of the depth magnification parameter PV set up beforehand, and it is further based on said stored depth magnification parameter PV. It has the scale-factor encoder which outputs said image pick-up signal after only a predetermined scale factor is expanded at least to a lengthwise direction. It replaces with said image pick-up means D3, in case the image pick-up signal which an image pick-up means D4 to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction outputs is processed, amplification processing is made by said scale-factor encoder, and it is characterized by the value of said depth magnification parameter PV being PV=NV/MV.
[0033] according to the aforementioned configuration, even if you use the image pick-up means of the configuration of the number for an image pick-up (MV individual in this

case) smaller than a predetermined number (NV individual in this case) of pixels to a lengthwise direction, the amplification processing to the signal of NV individual based on the signal of MV individual should do with a scale-factor encoder -- consequently, the picture signal in which image display without configuration distortion is possible to the limit of the lengthwise direction of a screen is formed, and, moreover, a predetermined screen aspect ratio is realized. The lengthwise direction amplification processing by this scale-factor encoder is constituted by an analog signal response or digital signal response.
[0034] The image image pick-up equipment concerning claim 9 of this invention is a thing according to claim 8. It has the A/D converter which changes into a digital signal the analog signal which the image pick-up means D4 outputs. And at least internal and external one side of said scale-factor encoder is equipped with the processing unit which processes said digital signal. Said scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with said processing unit. It is characterized by considering said data processing means as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said set-up depth magnification parameter, and performs scale-factor adjustment of a lengthwise direction.
[0035] According to the aforementioned configuration, correction, updating, and modification of the content of the depth magnification processing program are easily made by constituting a data processing means as a program which can be performed with a processing unit.
[0036] The image image pick-up equipment concerning claim 10 of this invention It is image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which the image pick-up means D5 which the pixel for an image pick-up of NV individual (NV> 1) is arranged by the pixel for an image pick-up and lengthwise direction of NH individual (NH> 1), and grows into them outputs. It has the storing means of the longitudinal direction scale-factor parameter PH set up beforehand and the depth magnification parameter PV. Furthermore, it is based on said stored longitudinal direction scale-factor parameter PH and the depth magnification parameter PV. It has the scale-factor encoder with which only a predetermined scale factor expands said image pick-up signal in the direction in every direction. In case the image pick-up signal which an image pick-up means D6 to replace with said image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) in a longitudinal direction in the pixel for an image pick-up and lengthwise direction of MH individual (NH>MH) outputs is processed Amplification processing is made by said scale-factor encoder, and the value of said scale-factor parameter is characterized by being PV=NV/MV at a PH=NH/MH pan.
[0037] According to the aforementioned configuration, even if it uses the image pick-up means of a configuration with few (the longitudinal direction in this case MH individual, further a lengthwise direction MV individual) pixels for an image pick-up than a predetermined number (the longitudinal direction in this case NH individual, further a lengthwise direction NV individual) In the amplification processing row to the signal of NV individual based on the signal of MV individual, with a scale-factor encoder the amplification processing to the signal of NH individual based on the signal of MH individual should do -- consequently, the picture signal in which image display without

configuration distortion is possible to the limit of the direction of a screen in every direction is formed, and, moreover, a predetermined screen aspect ratio is realized. Moreover, amplification processing to the both directions in every direction by this scale-factor encoder is enabled by constituting in an analog signal response or a digital signal response.

[0038] The image image pick-up equipment concerning claim 11 of this invention is a thing according to claim 10. Said image image pick-up equipment It has the processing unit which processes the A/D converter which changes into a digital signal the analog signal which said image pick-up means D6 outputs, and said digital signal. And said scale-factor encoder is equipped with the processing means constituted as a program which can be performed with said processing unit. It is characterized by considering said processing means as the configuration which processes the digital signal inputted directly or indirectly from said A/D converter based on said longitudinal direction scale-factor parameter and depth magnification parameter which were given, and performs scale-factor adjustment of both directions in every direction.

[0039] Therefore a debugging activity not only becomes efficient, but according to the aforementioned configuration, by constituting a data processing means as a program which can be performed with a processing unit, correction, updating, and modification of the content of a program are easy, and replacement of an in-every-direction both-directions scale-factor processing algorithm and addition / deletion activity are made efficiently.

[0040] Moreover, management flexible also about the change in exchange of a processing unit, or the amount of data, for example, the number of bits per pixel, since it incorporates and the change in the base is easy is attained, and control of the throughput of in-every-direction both-directions scale-factor processing becomes easy.

[0041]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained to a detail with reference to an attached drawing. In addition, although the operation gestalt described below is a part of gestalt of suitable implementation of this invention and desirable various definition is attached on the technical configuration, especially the range of this invention is not restricted to these gestalten, as long as there is no publication of the purport which limits this invention in the following explanation.

[0042] Drawing 1 is the block block diagram of the first operation gestalt of the image image pick-up equipment concerning this invention. As shown in this drawing, the image image pick-up equipment VC 1 concerning this operation gestalt is equipped with the signal-processing section 25 into which the read-out signal 21 outputted from an image pick-up means D to by_which the two-dimensional array of the pixel for an image pick-up was carried out is inputted, the data processing section 26 into which the output signal 22 from the signal-processing section 25 is inputted, and a reference clock generating means 33, and the output signal 23 from the data processing section 26 is further inputted into a display / record processor 27. The reference clock Ck which the reference clock generating means 33 generated is received by the image pick-up means D, the signal-processing section 25, the data processing section 26, and display / record processor 27.

[0043] The image pick-up means D consists of CCD solid state image pickup devices with which the two-dimensional array for example, of the pixel for an image pick-up was carried out, and it has the composition of length or a longitudinal direction that M pixels

for an image pick-up were located in a line with the single tier at least (the condition of having ranked with M longitudinal directions is shown by drawing 1). By the way, the signal-processing section 25, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal 31 from an image pick-up means 30 by which the numbers of effective pixels of the pixel for an image pick-up located in a line with length or a longitudinal direction at a single tier are said more predetermined N individuals than M pieces may originally be processed normally.

[0044] That is, when an image pick-up means 30 by which the number of effective pixels is N individual is connected to this image image pick-up equipment VC 1, in the signal-processing section 25, matrix processing etc. is performed to the read-out signal 31, and the signal [finishing / processing] 32 is sent to display / record processor 27, without passing through the data processing section 26. For example, the number of level effective pixels (in this case, set to N), level extraction timing (sampling period), etc. of the image pick-up means 30 are constituted so that the dip or breadth of an image formed eventually may realize screen top predetermined width of face at this time.

[0045] As mentioned above, when the circuit constant etc. is constituted so that the picture signal which constitutes the length or the horizontal single tier on a screen for the image pick-up signal of N individual from a pixel for an image pick-up of N individual on a par with a single tier based on the image pick-up signal of ejection and N individual one by one with a predetermined sampling period may be formed, the result of a request is not obtained, even if M pixels for an image pick-up fewer than this N individual (N>M) come out together with a single tier and apply a certain image pick-up means D.

[0046] So, with this operation gestalt, the data processing section 26 which can perform data processing based on the image pick-up signal 22 by which ejection processing was carried out from the image pick-up means D is formed. this data processing section 26 forms at least the picture signal which is made to generate the data of many N individuals and constitutes the length or the horizontal single tier on a screen from an M individual based on the processing data of these N individual as data processing by processing the image pick-up signal of M individual taken out from the pixel for an image pick-up of M individual on a par with a single tier one by one with the predetermined sampling period.

[0047] That is, although only M data appear in each signals 21 and 22 until it is taken out from the image pick-up means D and inputted into the data processing section 26 through the signal-processing section 25, amplification and zoom processing were performed in the data processing section 26, and, therefore, the processing data of many N individuals appear in the output signal 23 rather than M pieces from the data processing section 26. Since the amount of data of this N individual is equivalent to the signal 32 which processed the read-out signal 31 from the image pick-up means 30, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.

[0048] thus , according to this operation gestalt , when the image pick-up means of the configuration of the number for an image pick-up (in this case , M pieces) smaller than a predetermined number (in this case , N individual) of pixels in length or a longitudinal direction be connect , and the data processing section generate the data of N individual from M image pick-up signals , the picture signal in which image display without configuration distortion be possible to the limit of the length of a screen or a longitudinal direction be form .

[0049] Moreover, although this operation gestalt is applicable to an analog signal, it can

constitute [as opposed to / not only this but / a digital signal] possible [operation] further.
[0050] Furthermore, the function which generates the data of N individual from the M aforementioned image pick-up signals is only at least 1 function of the data processing section 26. The data processing section performs special effect processing which adds the signal of arbitration to M image pick-up signals further in addition to said function, or is represented by M image pick-up signals at for example, mosaic processing, scrolling processing, etc., and it is possible to make the picture signal in which the image display configuration distortion moreover fills in the length of a screen or a longitudinal direction is possible form. Consequently, formation of various images becomes possible at arbitration, and, therefore, that application range is wide.
[0051] Drawing 2 is the block block diagram of the second operation gestalt of the image image pick-up equipment concerning this invention. As shown in this drawing, the image image pick-up equipment VC 2 concerning this operation gestalt is equipped with the signal-processing section 35 into which the read-out signal 38 outputted from the image pick-up means D2 is inputted, the scale-factor encoder 37 into which the output signal 39 from the signal-processing section 35 is inputted, and the storing means 36 of the longitudinal direction scale-factor parameter PH set up beforehand. The scale-factor encoder 37 inputs the image pick-up signal 39 into display / record processor 27 as a signal 40 after at least amplification of only a predetermined scale factor in a longitudinal direction based on the stored longitudinal direction scale-factor parameter PH.
[0052] This image image pick-up equipment VC 2 is further equipped with the reference clock generating means 33, and the reference clock Ck which this reference clock generating means 33 generated is received by the image pick-up means D2, the signal-processing section 35, the scale-factor encoder 37, and display / record processor 27.
[0053] the image pick-up means D2 consists of CCD solid state image pickup devices with which the two-dimensional array for example, of the pixel for an image pick-up was carried out, and the pixel for an image pick-up is MH ****** as the number of effective pixels at a longitudinal direction single tier -- it has composition. By the way, the signal-processing section 35, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal 41 from an image pick-up means D1 by which the numbers of effective pixels of the pixel for an image pick-up located in a line with a longitudinal direction at a single tier are said more N individuals than M pieces may originally be processed normally.
[0054] That is, when the image pick-up means D1 is connected to this image image pick-up equipment VC 2, the signal [finishing / processing] 32 is sent to display / record processor 27, without the read-out signal 41 passing through the scale-factor encoder 37 by performing matrix processing etc. in the signal-processing section 35. For example, the number of level effective pixels (in this case, set to NH), level extraction timing (sampling period), etc. of the image pick-up means D1 are constituted so that the image formed eventually may become a predetermined aspect ratio at this time and a picture signal may be formed.
[0055] as mentioned above, the image pick-up of NH individual on a par with a single tier -- service water -- a sampling period predetermined from a common effective pixel -- at least -- the image pick-up signal of NH individual -- one by one -- ejection -- the image pick-up of MH individuals (NH>MH) fewer than this NH individual when the circuit

constant etc. is constituted so that the picture signal which constitutes the horizontal single tier on a screen based on the image pick-up signal of NH individual may be formed -- service water -- the result of a request is not obtained even if a common effective pixel applies the image pick-up means D2 on a par with a single tier.

[0056] So, in case the image pick-up signal 38 which the image pick-up means D2 outputs is processed, the scale-factor encoder 37 operates and it is made to replace with the image pick-up means D1, and to perform scale-factor processing with this operation gestalt, based on the output signal 39 from the signal-processing section 35.

[0057] As for this actuation, the value of the longitudinal direction scale-factor parameter PH within the storing means 36 is first made PH=NH/MH by setting out from the outside. The scale-factor encoder 37 the image pick-up signal of MH individual taken out one by one with the predetermined sampling period subsequently, by carrying out scale-factor processing based on the set-up longitudinal direction scale-factor parameter PH from the pixel for an image pick-up of MH individual on a par with a single tier The data of NH individual are made to generate and it sends to display / record processor 27 as a signal 40 in which the data of NH individual appeared. Thus, the picture signal which constitutes the horizontal single tier on a screen based on the data of NH individual obtained by scale-factor processing is formed.

[0058] That is, although only the data of MH individual appear in each signals 38 and 39 until it is taken out from the image pick-up means D2 and is inputted into the scale-factor encoder 37 through the signal-processing section 35, the data of NH individual appear in the output signal 40 from the scale-factor encoder 37. Since the amount of data of this NH individual is equivalent to the signal 42 which processed the read-out signal 41 from the image pick-up means D1, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.

[0059] Moreover, when an analog signal constitutes this operation gestalt, the storing means 36 is constituted from a resistor which can be adjusted from the exterior, and as for the scale-factor encoder 37, constituting from an operational amplifier etc. is desirable. Furthermore, when a digital signal constitutes this operation gestalt, the storing means 36 is constituted from accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior, and the scale-factor encoder 37 can be constituted from a microprocessor, a shift register, etc.

[0060] Drawing 3 is the block block diagram of the third operation gestalt of the image pick-up equipment concerning this invention. Drawing 4 is the configuration explanatory view of an image pick-up means by which the number of level effective pixels is NH about the image pick-up means shown in drawing 3 . Furthermore, drawing 5 is the configuration explanatory view of an image pick-up means by which the number of level effective pixels is MH about the image pick-up means shown in drawing 3 . Furthermore, drawing 6 is the principle explanatory view of the art of the image pick-up signal concerning this invention.

[0061] As shown in drawing 3 , the image image pick-up equipment VC 3 concerning this operation gestalt A sample hold means 3 by which 2d of read-out signals of the horizontal single tier outputted from an image pick-up means D2 by which the two-dimensional array of the pixel for an image pick-up was carried out is inputted, A/D converter 5 which carries out digital conversion of the analog signal 3a which is the output of the sample hold means 3, The camera signal-processing section 6 which

performs digital signal processing to digital output signal 5a of A/D converter 5, It has the scale-factor encoder 7 of the digital configuration which carries out scale-factor processing based on the longitudinal direction scale-factor parameter PH in which processed Digital Stream 6a was stored by the longitudinal direction scale-factor parameter storing means 10. As for the longitudinal direction scale-factor parameter storing means 10, it is desirable to consist of accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior.

[0062] The scale-factor encoder 7 is equipped with the data processing means 9, and this data processing means 9 is constituted from a program format which can be performed with the processing unit (not shown) which it had in the scale-factor encoder 7, or the processing unit (system control CPU) 8 provided besides the scale-factor encoder 7. Therefore, as for the data processing means 9, it is desirable to consist of memory apparatus in which the store of a program is possible. The data by which scale-factor processing was carried out with the data processing means 9 are supplied to the record processor of the latter part which is not illustrated as output 7a from the scale-factor encoder 7.

[0063] This image image pick-up equipment VC 3 is further equipped with clock generation equipment 4, and the reference clock Ck which this clock generation equipment 4 generated is supplied to the actuation timing generating means 2, A/D converter 5, the camera signal-processing section 6, and the record processor that is not illustrated further.

[0064] Moreover, the processing unit (system control CPU) 8 provided controls the camera signal-processing section 6, the scale-factor encoder 7, and the actuation timing generating means 2 by control signal 8a, or performs the data processing means 9 of the scale-factor encoder 7.

[0065] The actuation timing generating means 2 is controlled by control signal 8a under existence of said reference clock Ck, and supplies actuation timing signal 2a of the image pick-up means D2 (in this case, CCD solid state image pickup device) to the image pick-up means D2 as this result.

[0066] As an image pick-up means D2 by which the two-dimensional array of the pixel for an image pick-up was carried out, application of a CCD image sensor, the solid state image pickup device by the MOS image sensor, and a division CCD solid state image pickup device is desirable. Or application of the image tube of a tubing type with which the two-dimensional array of the sense section was carried out is also possible.

[0067] In the camera signal-processing section 6, sample hold of the 2d of the signals outputted from the image pick-up means is carried out, the matrix operation of RGB synchronization processing for example, is performed to signal 5a by which digital conversion was carried out, and processing of making a color-difference signal and a luminance signal form further etc. is performed by the digital method.

[0068] By the way, this image image pick-up equipment VC 3 begins a reference clock Ck. The actuation timing generating means 2, A/D converter 5, the camera signal-processing section 6, the record processor that is not illustrated further originally It is designed so that the read-out signal from an image pick-up means D1 by which the number of effective pixels of the pixel for an image pick-up located in a line with a longitudinal direction as shown in drawing 4 at a single tier is NH individual (for example, 768 pieces) and by which the two-dimensional array of the pixel for an image

pick-up was carried out may be processed normally.
[0069] That is, when the image pick-up means D1 is connected to this image image pick-up equipment VC 3, as for a read-out signal, matrix processing etc. is performed in the camera signal-processing section 6, and signal 6a [finishing / processing] is sent to a latter record processor, without passing through the scale-factor encoder 7. For example, the number of level effective pixels (NH in this case), level extraction timing (sampling period), etc. of the image pick-up means D1 are constituted so that the image formed eventually may become a predetermined aspect ratio at this time and a picture signal may be formed.
[0070] as mentioned above, the image pick-up of NH individual on a par with a single tier -- service water -- a sampling period predetermined from a common effective pixel -- at least -- the image pick-up signal of NH individual -- one by one -- ejection -- When the circuit constant etc. is constituted so that the picture signal which constitutes the horizontal single tier on a screen based on the image pick-up signal of NH individual may be formed the image pick-up of MH individuals (for example, 711 pieces) fewer than this NH individual as shown in drawing 5 -- service water -- an image pick-up means D2 by which a common effective pixel is located in a line with a single tier and by which the two-dimensional array of the pixel for an image pick-up was carried out is inapplicable promptly.
[0071] So, in case 2d of image pick-up signals which the image pick-up means D2 outputs is processed, it is made to make it go via the scale-factor encoder 7, and is made to replace with the image pick-up means D1, and to perform scale-factor processing with this operation gestalt, based on output signal 6a from the camera signal-processing section 6.
[0072] First, this actuation is made PH=NH/MH by setting out from the outside, subsequently the data processing means 9 in the scale-factor encoder 7 makes the data of NH individual generate by carrying out scale-factor processing of the signal in which the data of MH individual appeared based on the set-up longitudinal direction scale-factor parameter PH, and the value of the longitudinal direction scale-factor parameter PH within the storing means 10 sends it to a record processor as signal 7a in which the data of NH individual appeared. Thus, the picture signal which constitutes the horizontal single tier on a screen based on the data of NH individual obtained by scale-factor processing is formed.
[0073] That is, although only the data of MH individual appear in each signals 2d, 3a, 5a, and 6a until it is taken out from the image pick-up means D2 and is inputted into the scale-factor encoder 7 through the camera signal-processing section 6, the data of NH individual appear in output-signal 7a from the scale-factor encoder 37. Since the amount of data of this NH individual is equivalent to the signal which processed the read-out signal from the image pick-up means D1, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.
[0074] The principle of this scale-factor processing is explained based on drawing 6 . Since, as for the actuation timing generating means 2, a level effective pixel carries out actuation corresponding to 768 pieces, after driving 711 effective pixels of this image pick-up means D2, the non-signal part Ep for 57 clocks is outputted. although the aspect ratio of a usual picture area should be 3:4 essentially by this -- a horizontal chisel -- since it means carrying out reading appearance quickly in time, it collapses and becomes an

aspect ratio called 3:3.703. Therefore, if a screen display is made in this condition, it will become like frame structure floor line1. That is, originally, the image pattern Izp3 which is a perfect circle will be displayed to be illustrated with an ellipse, and serves as nonconformity.
[0075] Then, the non-signal part Ep for 57 excessive clocks is thrown away, and one [4/3.703 time the scale factor of this] processing is performed horizontally. Consequently, the normal screen of an aspect ratio 3:4 like frame structure floor line2 is obtained. In this frame structure floor line2, the image pattern Izp3 is restored to an original perfect circle.
[0076] Although the data processing means 9 performs scale-factor processing, this makes the data of more NH individuals than MH individual generate by overlapping and imprinting some of the data of for example, MH individual on line memory. Or various actuation [make / the data which should add and fill up with a weight operation the data which replace with and adjoin a mere duplication imprint / generate etc.] is also possible. In addition, the configuration make for example, an electric target use the data processing means 9 also [configuration] in the electronic zoom circuit which performs scaling processing etc. is also possible.
[0077] Drawing 7 is the block block diagram of the fourth operation gestalt of the image image pick-up equipment concerning this invention. the image image pick-up equipment VC 4 which apply to this operation gestalt as show in this drawing be equip with the signal processing section 45 into which the read-out signal 44 which be output from an image pick-up means D4 to by_which the two-dimensional array of the pixel for an image pick-up be carried out , and in which the vertical effective pixel data of MV individual of a vertical single tier appeared be input , the scale factor encoder 47 into which the output signal 49 from the signal processing section 45 be input , and the storing means 46 of the depth magnification parameter PV set up beforehand . The scale-factor encoder 47 inputs the image pick-up signal 49 into display / record processor 27 as a signal 50 after at least amplification of only a predetermined scale factor in a lengthwise direction based on the stored depth magnification parameter PV.
[0078] This image image pick-up equipment VC 4 is further equipped with the reference clock generating means 33, and the reference clock Ck which this reference clock generating means 33 generated is received by the image pick-up means D4, the signal-processing section 45, the scale-factor encoder 47, and display / record processor 27.
[0079] for example, the pixel for an image pick-up constitutes the image pick-up means D4 from a CCD solid state image pickup device by which the two-dimensional array was carried out -- having -- the pixel for an image pick-up of a lengthwise direction single tier -- as the number of effective pixels -- MV piece -- it has composition located in a line.
[0080] By the way, the signal-processing section 45, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal 51 from the image pick-up means D3 which is NV individual with more effective pixels of the pixel for an image pick-up located in a line with a lengthwise direction at a single tier than said MV individual may originally be processed normally.
[0081] That is, when the image pick-up means D3 is connected to this image image pick-up equipment VC 4, the signal [finishing / processing] 52 is sent to display / record processor 27, without the read-out signal 51 passing through the scale-factor encoder 47 by performing matrix processing etc. in the signal-processing section 45. For example, the number of vertical effective pixels (in this case, set to NV) and sampling period of the

image pick-up means D3 are constituted so that the image formed eventually may become predetermined aspect ratio v:h at this time and a picture signal may be formed.
[0082] At least the image pick-up signal of NV individual with a predetermined sampling period from the vertical effective pixel for an image pick-up of NV individual on a par with a vertical single tier As mentioned above, ejection, When the circuit constant etc. is constituted so that the picture signal which constitutes the vertical single tier on a screen based on the image pick-up signal of NV individual may be formed, the result of a request is not obtained even if the vertical effective pixel for an image pick-up of MV individuals (NV>MV) fewer than this NV individual applies the image pick-up means D4 on a par with a single tier.
[0083] So, it replaces with the image pick-up means D3, and in case the image pick-up signal 44 which the image pick-up means D4 outputs is processed, the scale-factor encoder 47 operates and it is made to perform scale-factor processing to an output signal 49 from the signal-processing section 45 with this operation gestalt.
[0084] As for this actuation, the value of the depth magnification parameter PV within the storing means 36 is first set to PV=NV/MV by setting out from the outside. The signal in which the image pick-up data of MV individual which the scale-factor encoder 47 took out from the pixel for an image pick-up of MV individual on a par with a single tier appeared subsequently, by carrying out scale-factor processing based on the set-up depth magnification parameter PV The data of NV individual are made to generate and it sends to display / record processor 27 as a signal 50 in which the data of NV individual appeared. Thus, the picture signal which constitutes the vertical single tier on a screen based on the data of NV individual obtained by scale-factor processing is formed.
[0085] That is, although only the data of MV individual appear in the signal 49 inputted into the scale-factor encoder 47, the data of NV individual appear in the output signal 50 from the scale-factor encoder 47. Since the amount of data of this NV individual is equivalent to the signal 52 which processed the read-out signal 51 from the image pick-up means D3, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.
[0086] Moreover, when an analog signal constitutes this operation gestalt, the storing means 46 is constituted from a resistor which can be adjusted from the exterior, and as for the scale-factor encoder 47, constituting from an operational amplifier etc. is desirable.
[0087] Furthermore, when a digital signal constitutes this operation gestalt, the storing means 46 is constituted from accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior, and the scale-factor encoder 47 can be constituted from a microprocessor, a shift register, etc. Furthermore, the configuration which arranges the frame memory with which temporary storing of 2-dimensional data is presented in any case is also possible.
[0088] Furthermore, there is a vertical wide angle photography function as an applicable field of such a depth magnification adjustment function. That is, a perpendicular direction compression image pick-up is intentionally carried out through a vertical wide angle lens to the image sensor with which the perpendicular direction pixel is restricted. Since compression is optically performed at this time, actuation of an image sensor is the same as the former, and good. And at the time of record or playback, scale-factor processing is performed and a wide angle screen is restored. At the time of playback, concomitant use

with a scrolling feature is especially effective.
[0089] As a field which the scale-factor processing to a lengthwise direction (perpendicular direction) can apply effectively further in addition to this, print processing (a print and hard copy creation) of the static image to record processing (for example, digital still camera) of the static image to a record medium, display processing of the static image to a display, a form, etc. is possible.
[0090] Drawing 8 is the block block diagram of the fifth operation gestalt of the image image pick-up equipment concerning this invention. As shown in this drawing, the image image pick-up equipment VC 5 concerning this operation gestalt A/D converter 54 into which the read-out signal which is outputted from an image pick-up means D4 by which the two-dimensional array of the pixel for an image pick-up was carried out, and in which the vertical effective pixel data of MV individual of a vertical single tier appeared is inputted, It has the signal-processing section 55 into which the output signal 53 from A/D converter 54 is inputted, the scale-factor encoder 57 into which the output signal from the signal-processing section 55 is inputted, and the storing means 56 of the depth magnification parameter PV set up beforehand.
[0091] As for the storing means 56, it is desirable to consist of accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior.
[0092] Based on the depth magnification parameter PV stored in the storing means 56, the scale-factor encoder 57 is an encoder of the digital configuration which expands only a predetermined scale factor to a lengthwise direction at least, and carries out scale-factor processing, and inputs the input signal which is processed Digital Stream into display / record processor 27 as a signal 60 after scale-factor processing.
[0093] In the scale-factor encoder 57, it has the data processing means 59 and this data processing means 59 consists of program formats which can be performed with the processing unit 58 which it had in the scale-factor encoder 57, or the processing unit (not shown) provided besides the scale-factor encoder 57. Therefore, as for the data processing means 59, it is desirable to consist of memory apparatus in which the store of a program is possible.
[0094] This image image pick-up equipment VC 5 is further equipped with the reference clock generating means 33, and the reference clock Ck which this reference clock generating means 33 generated is received by the image pick-up means D4, A/D converter 54, the signal-processing section 55, the scale-factor encoder 57, and display / record processor 27.
[0095] for example, the pixel for an image pick-up constitutes the image pick-up means D4 from a CCD solid state image pickup device by which the two-dimensional array was carried out -- having -- the pixel for an image pick-up of a lengthwise direction single tier -- as the number of effective pixels -- MV piece -- it has composition located in a line.
[0096] By the way, A/D converter 54, the signal-processing section 55, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal from the image pick-up means D3 which is NV individual with more effective pixels of the pixel for an image pick-up located in a line with a lengthwise direction at a single tier than said MV individual may originally be processed normally.
[0097] That is, when the image pick-up means D3 is connected to this image image pick-up equipment VC 5, the read analog signal turns into a digital signal 61 with A/D

converter 54, matrix processing etc. is performed in the signal-processing section 55, and the signal [finishing / processing] 62 is sent to display / record processor 27, without passing through the scale-factor encoder 57. For example, the number of vertical effective pixels (in this case, set to NV) and sampling period of the image pick-up means D3 are constituted so that the image formed eventually may become predetermined aspect ratio v:h at this time and a picture signal may be formed.

[0098] As mentioned above, when the circuit constant etc. is constituted so that the picture signal which constitutes the vertical single tier on a screen for the image pick-up signal of NV individual from a vertical effective pixel for an image pick-up of NV individual on a par with a vertical single tier based on the image pick-up signal of ejection and NV individual at least with a predetermined sampling period may be formed, the vertical effective pixel for an image pick-up of MV individuals (NV>MV) fewer than this NV individual cannot apply promptly image pick-up means D4 ** on a par with a single tier.

[0099] So, it replaces with the image pick-up means D3, and in case the image pick-up signal which the image pick-up means D4 outputs is processed, the scale-factor encoder 57 operates and it is made to perform scale-factor processing to an output signal from the signal-processing section 55 with this operation gestalt.

[0100] As for this actuation, the value of the depth magnification parameter PV within the storing means 56 is first set to PV=NV/MV by setting out from the outside. Subsequently, the signal in which the image pick-up data of MV individual which the scale-factor encoder 57 took out from the pixel for an image pick-up of MV individual on a par with a single tier appeared By receiving from A/D converter 54 directly or indirectly, and carrying out scale-factor processing based on the set-up depth magnification parameter PV, the data of NV individual are made to generate and it sends to display / record processor 27 as a signal 60 in which the data of NV individual appeared. Thus, the picture signal which constitutes the vertical single tier on a screen based on the data of NV individual obtained by scale-factor processing is formed.

[0101] That is, although only the data of MV individual appear in the signal inputted into the scale-factor encoder 57, the data of NV individual appear in the output signal 60 from the scale-factor encoder 57. Since the amount of data of this NV individual is equivalent to the signal 62 which processed the read-out signal from the image pick-up means D3, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.

[0102] Moreover, the storing means 56 is constituted from accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior, and the scale-factor encoder 57 can be constituted from a microprocessor, a shift register, etc. Furthermore, the configuration which arranges the frame memory with which temporary storing of 2-dimensional data is presented in any case is also possible.

[0103] Drawing 9 is the block block diagram of the sixth operation gestalt of the image image pick-up equipment concerning this invention. As shown in this drawing, the image image pick-up equipment VC 6 concerning this operation gestalt The signal-processing section 65 into which the read-out signal 64 in which the vertical effective pixel data of MV individual of the vertical single tier outputted from an image pick-up means D6 by which the two-dimensional array of the pixel for an image pick-up was carried out, or the level effective pixel data of MH individual of a horizontal single tier appeared is inputted,

It has the scale-factor encoder 68 into which the output signal 69 from the signal-processing section 65 is inputted, and the storing means 66 of the longitudinal direction scale-factor parameter PH set up beforehand and the storing means 67 of the depth magnification parameter PV.

[0104] The scale-factor encoder 68 inputs the image pick-up signal 69 into display / record processor 27 as a signal 70 after at least amplification of only a predetermined scale factor in a longitudinal direction or a lengthwise direction based on the stored longitudinal direction scale-factor parameter PH or the depth magnification parameter PV.

[0105] This image image pick-up equipment VC 6 is further equipped with the reference clock generating means 33, and the reference clock Ck which this reference clock generating means 33 generated is received by the image pick-up means D6, the signal-processing section 65, the scale-factor encoder 68, and display / record processor 27.

[0106] for example, the pixel for an image pick-up constitutes the image pick-up means D6 from a CCD solid state image pickup device by which the two-dimensional array was carried out -- having -- the pixel for an image pick-up of a lengthwise direction single tier -- as the number of effective pixels -- MV individual list -- the pixel for an image pick-up of a longitudinal direction single tier is MH ****** as the number of effective pixels simultaneously -- it has composition.

[0107] By the way, the signal-processing section 65, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal 71 from the image pick-up means D3 which is NH individual and NV individual with more effective pixels than said MH individual and MV individual of the pixel for an image pick-up located in a line with a longitudinal direction or a lengthwise direction at a single tier may originally be processed normally.

[0108] That is, when the image pick-up means D5 is connected to this image image pick-up equipment VC 6, the signal [finishing / processing] 72 is sent to display / record processor 27, without the read-out signal 71 passing through the scale-factor encoder 68 by performing matrix processing etc. in the signal-processing section 65. The horizontal and the number of vertical effective pixels (in this case, NH and NV), and sampling period of the image pick-up means D5 are constituted so that the image formed eventually may become predetermined aspect ratio v:h at this time and a picture signal may be formed.

[0109] as mentioned above, from the effective pixel for an image pick-up of NH individual and NV individual on a par with a horizontal single tier and a vertical single tier At least the image pick-up signal of NH individual and NV individual with a predetermined sampling period Ejection, When the circuit constant etc. is constituted so that the picture signal used as a predetermined aspect ratio may be formed based on the image pick-up signal of NH individual and NV individual The result of a request is not obtained even if the effective pixel for an image pick-up of this NH individual, MH individuals (NH>MH) fewer than NV individual, and MV individual (NV>MV) applies the image pick-up means D6 on a par with every direction each train.

[0110] So, with this operation gestalt, it replaces with the image pick-up means D5, and in case the image pick-up signal 64 which the image pick-up means D6 outputs is processed, it is made to perform scale-factor processing to an output signal 69 from the signal-processing section 65 with the scale-factor encoder 68.

[0111] First this actuation The storing means 66, the longitudinal direction scale-factor parameter PH in 67 The value of the depth magnification parameter PV by setting out from the outside PH=NH/MH, It is referred to as PV=NV/MV and subsequently to a single tier the signal in which the image pick-up data taken out from the pixel for an image pick-up of MH individual with which the scale-factor encoder 68 is located in a line, or MV individual appeared By carrying out scale-factor processing based on the set-up longitudinal direction scale-factor parameter PH or the depth magnification parameter PV, the data of NH individual or NV individual are made to generate, and it sends to display / record processor 27 as a signal 70 in which the data of NH individual or NV individual appeared. Thus, the picture signal which constitutes the horizontal single tier or vertical single tier on a screen based on the data of NH individual obtained by scale-factor processing or NV individual is formed.

[0112] That is, although only the data of MH individual or MV individual appear in the signal 69 inputted into the scale-factor encoder 68, the data of NH individual or NV individual appear in the output signal 70 from the scale-factor encoder 68. Since this amount of data is equivalent to the signal 72 which processed the read-out signal 71 from the image pick-up means D5, even if it therefore applies to this equipment, it becomes possible to obtain a desired image result.

[0113] Moreover, when an analog signal constitutes this operation gestalt, the storing means 66 and 67 are constituted from a resistor which can be adjusted from the exterior, and as for the scale-factor encoder 68, constituting from an operational amplifier etc. is desirable.

[0114] Furthermore, when a digital signal constitutes this operation gestalt, the storing means 66 and 67 are constituted from accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior, and the scale-factor encoder 68 can be constituted from a microprocessor, a shift register, etc. Furthermore, the configuration which arranges the frame memory with which temporary storing of 2-dimensional data is presented in any case is also possible.

[0115] Next, drawing 10 is the block block diagram of the seventh operation gestalt of the image image pick-up equipment concerning this invention. As shown in this drawing, the image image pick-up equipment VC 7 concerning this operation gestalt A/D converter 74 into which the read-out signal in which the effective pixel data of MH individual of the horizontal single tier outputted from an image pick-up means D6 by which the two-dimensional array of the pixel for an image pick-up was carried out, or MV individual of a vertical single tier appeared is inputted, It has the signal-processing section 75 into which the output signal 73 from A/D converter 74 is inputted, the scale-factor encoder 80 into which the output signal from the signal-processing section 75 is inputted, and the storing means 76 of the longitudinal direction scale-factor parameter PH set up beforehand and the storing means 77 of the depth magnification parameter PV.

[0116] As for the storing means 76 and 77, it is desirable to consist of accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior.

[0117] Based on the longitudinal direction scale-factor parameter PH stored in the storing means 76 and 77, or the depth magnification parameter PV, the scale-factor encoder 80 is an encoder of the digital configuration which expands only a predetermined scale factor to a longitudinal direction and a lengthwise direction at least, and carries out scale-factor

processing, and inputs the input signal which is processed Digital Stream into display / record processor 27 as a signal 83 after scale-factor processing.
[0118] In the scale-factor encoder 80, it has the data processing means (for level) 78, and the data processing means (for vertical) 79, and these data processing means 78 and 79 consist of program formats which can be performed with the processing unit 81 provided besides the scale-factor encoder 57, or the processing unit (not shown) which it had in the scale-factor encoder 80. Therefore, as for the data processing means 78 and 79, it is desirable to consist of memory apparatus in which the store of a program is possible.
[0119] This image image pick-up equipment VC 7 is further equipped with the reference clock generating means 33, and the reference clock Ck which this reference clock generating means 33 generated is received by the image pick-up means D6, A/D converter 74, the signal-processing section 75, the scale-factor encoder 80, and display / record processor 27.
[0120] for example, the pixel for an image pick-up constitutes the image pick-up means D6 from a CCD solid state image pickup device by which the two-dimensional array was carried out -- having -- the pixel for an image pick-up of a longitudinal direction single tier -- as the number of effective pixels -- the pixel for an image pick-up of MH individual list and a lengthwise direction single tier -- as the number of effective pixels -- MV piece -- it has composition located in a line.
[0121] By the way, A/D converter 74, the signal-processing section 75, display / record processors 27 including a reference clock Ck, etc. are designed so that the read-out signal from the image pick-up means D3 which is NH individual with more effective pixels of the pixel for an image pick-up located in a line with a longitudinal direction at a single tier than said MH individual, and is NV individual with more effective pixels of the pixel for an image pick-up further located in a line with a lengthwise direction at a single tier than said MV individual may originally be processed normally.
[0122] That is, when the image pick-up means D5 is connected to this image image pick-up equipment VC 7, the read analog signal turns into a digital signal 84 with A/D converter 74, matrix processing etc. is performed in the signal-processing section 75, and the signal [finishing / processing] 85 is sent to display / record processor 27, without passing through the scale-factor encoder 80. The horizontal and the number of vertical effective pixels (in this case, NH and NV), and sampling period of the image pick-up means D5 are constituted so that a picture signal with which the image formed eventually becomes predetermined aspect ratio v:h at this time may be formed.
[0123] At least the image pick-up signal of NH individual or NV individual with a predetermined sampling period from the vertical effective pixel for an image pick-up of NH individual on a par with a horizontal single tier or a vertical single tier, or NV individual As mentioned above, ejection, When the circuit constant etc. is constituted based on these signals so that a horizontal single tier or a vertical single tier may be formed on a screen, the image pick-up means D4 which is MH individual with few effective pixels than this NH individual or NV individual or MV individual for a single tier cannot be applied promptly.
[0124] So, it replaces with the image pick-up means D5, and in case the image pick-up signal which the image pick-up means D6 outputs is processed, the scale-factor encoder 80 operates and it is made to perform scale-factor processing of width and a lengthwise direction to an output signal from the signal-processing section 75 with this operation

gestalt.
[0125] First this actuation the value of the storing means 76, the longitudinal direction scale-factor parameter PH in 77, and the depth magnification parameter PV It is set to PH=NH/MH and PV=NV/MV by setting out from the outside, respectively.
Subsequently, the scale-factor encoder 80 receives directly or indirectly the signal in which the image pick-up data of MH individual or MV individual appeared from A/D converter 74. By carrying out scale-factor processing based on the set-up longitudinal direction scale-factor parameter PH or the depth magnification parameter PV, the data of NH individual or NV individual are made to generate, and it sends to display / record processor 27 as a signal 83 in which these data appeared. Thus, based on the data of NH individual obtained by scale-factor processing, and NV individual, a picture signal which makes a screen a predetermined aspect ratio is formed.
[0126] That is, although only the data of MH individual or MV individual appear in the signal inputted into the scale-factor encoder 80, the data of NH individual or NV individual appear in the output signal 83 from the scale-factor encoder 80. Since the amount of data of this NH individual or NV individual is equivalent to the signal 85 which processed the read-out signal from the image pick-up means D5, even if it therefore applies the image pick-up means D6 to this equipment, it becomes possible to obtain a desired image result.
[0127] Moreover, as for the scale-factor encoder 80, it is desirable to constitute from a microcomputer or a DSP (digital signal processor), and, as for the storing means 76 and 77, it is desirable to constitute from accessible nonvolatile memory equipments (for example, SRAM, EEPROM, a flash memory, etc.) from the exterior. In addition, the configuration by which chip-on was carried out at an aforementioned microcomputer or aforementioned DSP is sufficient as the nonvolatile memory equipment which constitutes these storing means 76 and 77. Furthermore, the configuration which arranges the frame memory with which temporary storing of 2-dimensional data is presented is also possible.
[0128] This invention makes it possible to connect an image pick-up means with few effective pixels by performing scale-factor processing, without changing signal processing of a basic clock or bases about the image image pick-up equipment with which the basic clock and the signal-processing part were constituted supposing connection of the image pick-up means of a certain number of effective pixels so that clearly from each operation gestalt described above.
[0129] For example, a basic clock enables connection of the CCD solid state image pickup device of 711 level effective pixels to the image pick-up equipment manufactured and adjusted for the CCD solid state image pickup devices of 768 level effective pixels which are an object for digital VTR as mentioned above by 14.3Mhz(es). Furthermore, it becomes applicable only by changing a horizontal scale-factor processing parameter also with 670 level effective pixels and 510 CCD solid state image pickup devices with which it is [other than these] existing.
[0130] Consequently, in the former, the circuitry of the image pick-up equipment which did not obtain a different configuration fake colander for every record system can be unified by this invention, consequently the cutback of circuits, compaction of an image pick-up equipment development cycle, and cost reduction can be realized.
[0131] Furthermore, the art and image image pick-up equipment of an image pick-up signal concerning this invention become possible [acting effectively and demonstrating

effectiveness], in case an ordinary solid state image pickup device with few pixels than this is carried in the image pick-up system by which circuitry is carried out to the solid state image pickup devices of the multi-pixel system based on extended definition television (HDTV) specification.

[0132]

[Effect of the Invention] As explained in full detail above, the art of the image pick-up signal concerning claim 1 of this invention M image pick-up means with few pixels for an image pick-up of length and a longitudinal direction single tier than N individual are used. Data processing is made to generate the data of N individual from M image pick-up signals which the number for an image pick-up of pixels took out with the sampling period corresponding to N individual. Since it considers as the configuration which forms the picture signal which constitutes the length or the horizontal single tier on a screen based on this, the picture signal in which the image display which moreover does not have configuration distortion is possible to the limit of the length of a screen or a longitudinal direction can be formed, and, moreover, it is not restrained by the aspect ratio of a screen.

[0133] And data generation of N individual from said M image pick-up signals It does not pass to at least 1 function of data processing. Further Addition of the signal of the arbitration to said M image pick-up signals, Or special effect processing to said M image pick-up signals, for example, scrolling processing etc., is performed, and the effectiveness that data processing in which the picture signal in which the image display configuration distortion fills in the length of a screen or a longitudinal direction is possible is moreover made to form is possible, and formation of various images is attained is done so.

[0134] The art of the image pick-up signal concerning claim 2 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a longitudinal direction based on the image pick-up signal which an image pick-up means D1 to have the pixel for an image pick-up of NH individual outputs It is applied in case an image pick-up means D2 to replace with the ****** means D1 and to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction is used. Only a scale factor PH (=NH/MH) carries out amplification processing of the image pick-up signal of MH individual outputted from the image pick-up means D2 in a longitudinal direction. Since it considers as the configuration which forms the picture signal of a predetermined aspect ratio based on the signal with which amplification processing was performed, the picture signal in which the image display which moreover does not have configuration distortion is possible to the limit of the longitudinal direction of a screen can be formed, and a further predetermined screen aspect ratio can be realized.

[0135] The art of the image pick-up signal concerning claim 3 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in a lengthwise direction based on the image pick-up signal which a ****** means D3 to have the pixel for an image pick-up of NV individual outputs It is applied in case an image pick-up means D4 to replace with the ****** means D3 and to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction is used. Only a scale factor PV (=NV/MV) carries out amplification processing of the image pick-up signal of MV individual outputted from the image pick-

up means D4 in a lengthwise direction. Since it considers as the configuration which forms the picture signal of a predetermined aspect ratio based on the signal with which amplification processing was performed, the picture signal in which the image display which moreover does not have configuration distortion is possible to the limit of the lengthwise direction of a screen can be formed, and a further predetermined screen aspect ratio can be realized.

[0136] The art of the image pick-up signal concerning claim 4 of this invention To the image image pick-up equipment constituted so that the picture signal of a predetermined aspect ratio might be formed in both directions in every direction based on the image pick-up signal which an image pick-up means D5 to have the pixel for an image pick-up of NV individual and NH individual, respectively outputs It is applied in case an image pick-up means D6 to replace with the image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) and MH individual (NH>MH) in both directions in every direction is used. The image pick-up signal of MV individual and MH individual outputted from the image pick-up means D6 in both directions in every direction A scale factor PV (=NV/MV) Since only a scale factor PH (=NH/MH) carries out amplification processing and is considered as the configuration which forms the picture signal of a predetermined aspect ratio based on the signal with which amplification processing was performed The picture signal in which the image display which moreover does not have configuration distortion is possible to the limit of the both directions of a screen in every direction can be formed, and a further predetermined screen aspect ratio can be realized.

[0137] The image image pick-up equipment concerning claim 5 of this invention to the image image pick-up equipment adjusted so that the picture signal with which the number for an image pick-up of length or a longitudinal direction single tier of pixels constitutes the length or the horizontal single tier on a screen from an image pick-up means which is N individual based on the image pick-up signal of N individual taken out with the sampling period might be formed The data processing section generates the data of N individual from M image pick-up signals which the number of the pixels for an image pick-up of a single tier took out one by one the SASAN pulling period using the image pick-up means D whose number is M (N>M). Since it considers as the configuration which forms the picture signal which constitutes the length or the horizontal single tier on a screen based on the processing data of this N individual, even if it uses the image pick-up means of the number for an image pick-up (M pieces) smaller than a predetermined number (N individual) of pixels The circuit section of the same basic clock or a band property can be used as it is, the picture signal in which image display without configuration distortion is possible to the limit of the one direction of a screen can be made to form by generation of the data of N individual, and, moreover, it is not restrained by the aspect ratio of a screen.

[0138] Furthermore, with the configuration by this claim, since either for the object for digital signal processing or analog signal processing can realize the data processing section, the object for application can be expanded further and, therefore, a large thing has the effectiveness.

[0139] The image image pick-up equipment concerning claim 6 of this invention is what was constituted so that the picture signal of a predetermined aspect ratio might be formed based on the image pick-up signal which an image pick-up means D1 by which the pixel

for an image pick-up of NH individual was arranged in the longitudinal direction outputs. It has the storing means of the longitudinal direction scale-factor parameter PH which is the set point, and the scale-factor encoder with which only the scale factor of Parameter PH expands an image pick-up signal to a longitudinal direction. In case the image pick-up signal which an image pick-up means D2 to replace with the image pick-up means D1, and to have the pixel for an image pick-up of MH individual (NH>MH) in a longitudinal direction outputs is processed Since it considers as the configuration which makes amplification processing with a scale-factor encoder with the longitudinal direction scale-factor parameter PH (= NH/MH), even if it uses the image pick-up means of the configuration of the number for an image pick-up (MH individual) smaller than a predetermined number (NH individual) of pixels in a longitudinal direction By making amplification processing, the picture signal in which image display without configuration distortion is possible to the limit of the longitudinal direction of a screen is formed, and, moreover, a predetermined screen aspect ratio is realized.

[0140] The image image pick-up equipment concerning claim 7 of this invention is a thing according to claim 6. It has the A/D converter which changes into a digital signal the analog signal which the image pick-up means D2 outputs. At least internal and external one side of a scale-factor encoder is equipped with the processing unit which processes a digital signal. A scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with a processing unit. Since a data processing means is considered as the configuration which processes the digital signal inputted directly or indirectly from the A/D converter based on the set-up longitudinal direction scale-factor parameter PH, and performs lateral scale-factor adjustment Correction, updating, and modification of the content of a program are easy, and therefore it not only does a debugging activity efficient, but it does efficient replacement of a longitudinal direction scale-factor processing algorithm and addition / deletion activity.

[0141] Moreover, since exchange of a processing unit and the change in the base are easy, management flexible also about the change in the amount of data, for example, the number of bits per pixel, is attained, and control of a longitudinal direction scale-factor processing throughput becomes easy.

[0142] The image image pick-up equipment concerning claim 8 of this invention is what was constituted so that the picture signal of a predetermined aspect ratio might be formed based on the image pick-up signal which an image pick-up means D3 by which the pixel for an image pick-up of NV individual was arranged in the lengthwise direction outputs. It has the storing means of the depth magnification parameter PV which is the set point, and the scale-factor encoder with which only the scale factor of Parameter PV expands an image pick-up signal to a lengthwise direction. In case the image pick-up signal which an image pick-up means D4 to replace with the image pick-up means D3, and to have the pixel for an image pick-up of MV individual (NV>MV) in a lengthwise direction outputs is processed Since it considers as the configuration which makes amplification processing with a scale-factor encoder with the depth magnification parameter PV (=NV/MV), even if it uses the image pick-up means of the configuration of the number for an image pick-up (MV individual) smaller than a predetermined number (NV individual) of pixels to a lengthwise direction By making amplification processing, the picture signal in which image display without configuration distortion is possible to the limit of the lengthwise

direction of a screen is formed, and, moreover, a predetermined screen aspect ratio is realized.

[0143] The image image pick-up equipment concerning claim 9 of this invention is a thing according to claim 8. It has the A/D converter which changes into a digital signal the analog signal which the image pick-up means D4 outputs. At least internal and external one side of a scale-factor encoder is equipped with the processing unit which processes a digital signal. A scale-factor encoder is equipped with the data processing means constituted as a program which can be performed with a processing unit. Since a data processing means is considered as the configuration which processes the digital signal inputted directly or indirectly from the A/D converter based on the set-up depth magnification parameter PV, and performs scale-factor adjustment of a lengthwise direction Correction, updating, and modification of the content of a program are easy, and therefore it not only does a debugging activity efficient, but it does efficient replacement of a depth magnification processing algorithm and addition / deletion activity.

[0144] Moreover, since exchange of a processing unit and the change in the base are easy, management flexible also about the change in the amount of data, for example, the number of bits per pixel, is attained, and control of a longitudinal direction scale-factor processing throughput becomes easy.

[0145] The image image pick-up equipment concerning claim 10 of this invention is what was constituted so that the picture signal of a predetermined aspect ratio might be formed based on the image pick-up signal which an image pick-up means D5 by which NH individual was arranged in the longitudinal direction and the pixel for an image pick-up of NV individual was arranged in the lengthwise direction outputs. The storing means of the scale-factor parameters PV and PH of the both directions in every direction which are the set points, It has the scale-factor encoder with which only the scale factor of Parameters PV and PH expands an image pick-up signal to both directions in every direction. In case the image pick-up signal which an image pick-up means D6 to replace with the image pick-up means D5, and to have the pixel for an image pick-up of MV individual (NV>MV) and MH individual (NH>MH) in both directions in every direction outputs is processed Since it considers as the configuration which makes amplification processing with a scale-factor encoder with the scale-factor parameters PV (= NV/MV) and PH (=NH/MH) of both directions in every direction Even if it uses the image pick-up means of the configuration of the number for an image pick-up (MV individual, MH individual) smaller than a predetermined number (NV individual, NH individual) of pixels in both directions in every direction The picture signal in which the image display configuration distortion fills in the both directions of a screen in every direction is possible by making amplification processing is formed in both directions in every direction, and, moreover, a predetermined screen aspect ratio is realized.

[0146] The image image pick-up equipment concerning claim 11 of this invention is a thing according to claim 10. It has the processing unit which processes the A/D converter which changes into a digital signal the analog signal which the image pick-up means D6 outputs, and said digital signal. A scale-factor encoder is equipped with the processing means constituted as a program which can be performed with a processing unit. Since a processing means is considered as the configuration which processes the digital signal inputted from the A/D converter based on the scale-factor parameter of the given both directions in every direction, and performs scale-factor adjustment of both directions in

every direction Therefore a debugging activity not only becomes efficient, but correction, updating, and modification of the content of a program are easy, and it can do efficiently replacement of an in-every-direction both-directions scale-factor processing algorithm and addition / deletion activity.

[0147] Moreover, since exchange of a processing unit and the change in the base are easy, management flexible also about the change in the amount of data, for example, the number of bits per pixel, is attained, and control of the throughput of in-every-direction both-directions scale-factor processing becomes easy.

[0148] The configuration of this invention enables [in / therefore / in the equipment which this has many amounts of data processing like a color picture with an especially high definition, and must be performed like a color dynamic image moreover that multistage processing does not have delay in a criteria time slice, it is important, and / the system of such a high level] offer of an effective solution.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block block diagram of the first operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 2] It is the block block diagram of the second operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 3] It is the block block diagram of the third operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 4] It is the configuration explanatory view of an image pick-up means by which the number of level effective pixels is NH about the image pick-up means shown in drawing 3 .

[Drawing 5] It is the configuration explanatory view of an image pick-up means by which the number of level effective pixels is MH about the image pick-up means shown in drawing 3 .

[Drawing 6] It is the principle explanatory view of the art of the image pick-up signal concerning this invention.

[Drawing 7] It is the block block diagram of the fourth operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 8] It is the block block diagram of the fifth operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 9] It is the block block diagram of the sixth operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 10] It is the block block diagram of the seventh operation gestalt of the image image pick-up equipment concerning this invention.

[Drawing 11] It is a mimetic diagram explaining the screen configuration of 8mm video camera with which the normal aspect ratio was realized.

[Drawing 12] It is a mimetic diagram explaining the screen configuration of the digital camcorder with which the normal aspect ratio was realized.

[Drawing 13] It is a mimetic diagram explaining the screen configuration at the time of application of the image pick-up means of few level effective pixels.

[Description of Notations]
VC1 -- Image image pick-up equipment, VC3 concerning the first operation gestalt of this invention -- Image image pick-up equipment concerning the third operation gestalt of this invention, Ck [-- The number of level effective pixels,] -- A clock, D -- An image pick-up means, D2 -- An image pick-up means, M N -- The number of level effective pixels, MH -- The number of level effective pixels, NH -- The number of level effective pixels, MV -- The number of vertical effective pixels, NV -- The number of vertical effective pixels, PH -- Longitudinal direction scale-factor parameter, 2 -- An actuation timing generating means, 3 -- A sample hold means, 4 -- Clock generation equipment, 5 [-- A processing unit, 9 / -- A data processing means, 10 / -- A longitudinal direction scale-factor parameter storing means, 25 / -- The signal-processing section, 26 / -- The data processing section, 27 / -- Display / record processor, 30 / -- An image pick-up means, 33 / -- Reference clock generating means.] -- An A/D converter, 6 -- The camera signal-processing section, 7 -- A scale-factor encoder, 8